# B SIMPLEST RADICAL FORM

A radical is in **simplest form** when the number under the radical sign is the smallest possible integer.

**Example 5** **Self Tutor**

Write $\sqrt{28}$ in simplest radical form.

## Example 5

Self Tutor

Write $\sqrt{28}$ in simplest radical form.

$$\begin{aligned}
&\sqrt{28} \\
&= \sqrt{4 \times 7} \\
&= \sqrt{4} \times \sqrt{7} \\
&= 2\sqrt{7}
\end{aligned}$$

**1** Write in simplest radical form:

**a** $\sqrt{24}$ **b** $\sqrt{50}$ **c** $\sqrt{54}$ **d** $\sqrt{40}$

**e** $\sqrt{56}$ **f** $\sqrt{63}$ **g** $\sqrt{52}$ **h** $\sqrt{44}$

**i** $\sqrt{60}$ **j** $\sqrt{90}$ **k** $\sqrt{96}$ **l** $\sqrt{68}$

**m** $\sqrt{175}$ **n** $\sqrt{162}$ **o** $\sqrt{128}$ **p** $\sqrt{700}$

**2** Write in simplest radical form:

**a** $\sqrt{\frac{5}{9}}$ **b** $\sqrt{\frac{18}{4}}$ **c** $\sqrt{\frac{12}{16}}$ **d** $\sqrt{\frac{75}{36}}$

**3** Write in simplest radical form $a + b\sqrt{n}$ where $a, b \in \mathbb{Q}$, $n \in \mathbb{Z}$:

**a** $\frac{4+\sqrt{8}}{2}$ **b** $\frac{6-\sqrt{12}}{2}$ **c** $\frac{4+\sqrt{20}}{4}$ **d** $\frac{8-\sqrt{32}}{4}$

**e** $\frac{12+\sqrt{72}}{6}$ **f** $\frac{18+\sqrt{27}}{6}$ **g** $\frac{14-\sqrt{60}}{8}$ **h** $\frac{5-\sqrt{200}}{10}$

**1** **a** $2\sqrt{6}$ **b** $5\sqrt{2}$ **c** $3\sqrt{6}$ **d** $2\sqrt{10}$

**e** $2\sqrt{14}$ **f** $3\sqrt{7}$ **g** $2\sqrt{13}$ **h** $2\sqrt{11}$

**i** $2\sqrt{15}$ **j** $3\sqrt{10}$ **k** $4\sqrt{6}$ **l** $2\sqrt{17}$

**m** $5\sqrt{7}$ **n** $9\sqrt{2}$ **o** $8\sqrt{2}$ **p** $10\sqrt{7}$

**2** **a** $\frac{\sqrt{5}}{3}$ **b** $\frac{3\sqrt{2}}{2}$ **c** $\frac{\sqrt{3}}{2}$ **d** $\frac{5\sqrt{3}}{6}$

**3** **a** $2+\sqrt{2}$ **b** $3-\sqrt{3}$ **c** $1+\frac{1}{2}\sqrt{5}$ **d** $2-\sqrt{2}$

**e** $2+\sqrt{2}$ **f** $3+\frac{1}{2}\sqrt{3}$ **g** $\frac{7}{4}-\frac{1}{4}\sqrt{15}$ **h** $\frac{1}{2}-\sqrt{2}$